

## Claims

What is claimed is:

- 5           1.    An automatic gear shifting device for a vehicle comprising, in combination: means for selectively shifting gears of the vehicle when a brake pedal of the vehicle is engaged; an arm having an end portion pivotally coupled to said shifting means for selectively shifting gears; and means  
10   for providing reciprocating motion coupled to a portion of said arm for moving said arm when the brake pedal is engaged.
2.    The automatic gear shifting device for a vehicle according to Claim 1 further comprising a first linkage coupler coupled to said arm; a transmission linkage cable  
15   coupled to said first linkage coupler; a transmission shift stick of the vehicle coupled to said transmission linkage cable so that the transmission shift stick shifts from drive gear to neutral gear when the brake pedal is engaged and from neutral gear to drive gear when the brake pedal is disengaged.
- 20           3.    The automatic gear shifting device for a vehicle according to Claim 1 further comprising said selectively shifting gears means comprising a transmission linkage shaft and a member having an opening on a portion of a surface of said member, said opening of said member for receiving said  
25   transmission linkage shaft.

4. The automatic gear shifting device for a vehicle according to Claim 3 wherein said member having a multiplicity of holes on a portion of the surface of said member for coupling said member to a portion of a surface of the motor compartment of the vehicle.

5. The automatic gear shifting device for a vehicle according to Claim 1 wherein said means for providing reciprocating motion comprises at least one actuator for moving said arm when the brake pedal is engaged.

6. The automatic gear shifting device for a vehicle according to Claim 5 further comprising a pair of actuators, said pair of actuators comprising a neutral gear positioning solenoid and a drive gear positioning solenoid, said neutral gear positioning solenoid activated and said drive gear positioning solenoid deactivated when the brake pedal is engaged and said drive gear positioning solenoid activated and said neutral gear positioning solenoid deactivated when the brake pedal is disengaged.

7. The automatic gear shifting device for a vehicle according to Claim 5 further comprising a brake pedal actuator, said brake pedal actuator comprising said arm coupled to a first linkage coupler, the brake pedal coupled to a second linkage coupler and one end of a brake linkage cable coupled to said first linkage coupler and an opposite end of

said brake linkage cable coupled to said second linkage coupler so that said arm moves when the brake pedal is engaged; a second actuator comprising a drive gear positioning solenoid; said brake pedal actuator shifted to a neutral gear position and said drive gear positioning solenoid deactivated when the brake is engaged and said drive gear positioning solenoid activated and said brake pedal actuator shifted to a drive gear position when the brake is disengaged.

8. The automatic gear shifting device for a vehicle according to Claim 7 further comprising a retainer, said retainer coupled to a wall of the vehicle separating a portion of a passenger compartment of the vehicle and a portion of a motor compartment of the vehicle, said retainer coupled to a portion of a surface of said brake linkage cable for maintaining said portion of the surface of said brake linkage cable in said wall.

9. An automatic gear shifting device for a vehicle comprising, in combination: a transmission linkage shaft for shifting gears of the vehicle; a member coupled to a portion of a surface of a motor compartment of the vehicle, said member having an opening for receiving said transmission linkage shaft; an arm having an end portion pivotally coupled to said transmission linkage shaft for shifting from drive gear to neutral gear when a brake pedal is engaged; at least

one actuator for providing reciprocating motion, said at least one actuator coupled to said arm for moving said arm when the brake pedal is engaged.

10. The automatic gear shifting device for a vehicle  
5 according to Claim 9 further comprising a first linkage coupler coupled to said arm, a transmission linkage cable coupled to said first linkage coupler, a transmission shift stick of the vehicle coupled to said transmission linkage cable so that the transmission shift stick shifts from drive  
10 gear to neutral gear when the brake pedal is engaged and from neutral gear to drive gear when the brake pedal is disengaged.

11. The automatic gear shifting device for a vehicle according to Claim 9 wherein said member having a multiplicity of holes on a portion of the surface of said member for  
15 coupling to the portion of the surface of the motor compartment of the vehicle.

12. The automatic gear shifting device for a vehicle according to Claim 9 further comprising a pair of actuators; said pair of actuators comprising a neutral gear positioning  
20 solenoid and a drive gear positioning solenoid, said neutral gear positioning solenoid activated and said drive gear positioning solenoid deactivated when the brake pedal is engaged and said drive gear positioning solenoid activated and

said neutral gear positioning solenoid deactivated when the brake pedal is disengaged.

13. The automatic gear shifting device for a vehicle according to Claim 9 further comprising a brake pedal actuator, said brake pedal actuator comprising said arm coupled to a first linkage coupler, the brake pedal coupled to a second linkage coupler and one end of a brake linkage cable coupled to said first linkage coupler and an opposite end of said brake linkage cable coupled to said second linkage coupler so that said arm moves when the brake pedal is engaged; a second actuator comprising a drive gear positioning solenoid; said brake pedal actuator shifted to a neutral gear position and said drive gear positioning solenoid deactivated when the brake is engaged and said drive gear positioning solenoid activated and said brake pedal actuator shifted to a drive gear position when the brake is disengaged.

14. A method for achieving improved fuel economy of a vehicle comprising the steps of:  
providing means for selectively shifting gears of the vehicle when a brake pedal of the vehicle is engaged;  
providing an arm having an end portion pivotally coupled to said means for selectively shifting gears; and

providing reciprocating motion means, said reciprocating motion means coupled to said arm for moving said arm when the brake pedal is engaged.

15. The method for achieving improved fuel economy of a  
5 vehicle according to Claim 14 further comprising the steps of:  
providing a first linkage coupler coupled to said arm;  
providing a transmission linkage cable coupled to said first linkage coupler;  
providing a transmission shift stick of the vehicle coupled to  
10 said transmission linkage cable; and  
shifting the transmission shift stick from drive gear to neutral gear when the brake pedal is engaged and from neutral gear to drive gear when the brake pedal is disengaged.

16. The method for achieving improved fuel economy of a  
15 vehicle according to Claim 14 further comprising the steps of:  
providing said means for selectively shifting gears comprising a transmission linkage shaft; and  
providing a member having an opening on a portion of a surface of said member, said opening of said member for receiving said  
20 transmission linkage shaft.

17. The method for achieving improved fuel economy of a vehicle according to Claim 16 further comprising the steps of:  
providing said member having a multiplicity of holes on a portion of the surface of said member; and

coupling said member to a portion of a surface of a motor compartment of the vehicle.

18. The method for achieving improved fuel economy of a vehicle according to Claim 14 wherein said reciprocating  
5 motion means comprising at least one actuator for moving said arm when the brake pedal is engaged.

19. The method for achieving improved fuel economy of a vehicle according to Claim 18 further comprising the steps of:  
providing a pair of actuators, said pair of actuators  
10 comprising a neutral gear positioning solenoid and a drive gear positioning solenoid;  
activating said neutral gear positioning solenoid and  
deactivating said drive gear positioning solenoid when the  
brake pedal is engaged; and  
15 activating said drive gear positioning solenoid and  
deactivating said neutral gear positioning solenoid when the  
brake pedal is disengaged.

20. The method for achieving improved fuel economy of a vehicle according to Claim 18 further comprising the steps of:  
20 providing a brake pedal actuator, said brake pedal actuator comprising said arm coupled to a first linkage coupler, the brake pedal coupled to a second linkage coupler and one end of a brake linkage cable coupled to said first linkage coupler and an opposite end of said brake linkage cable coupled to

said second linkage coupler so that said arm moves when the  
brake pedal is engaged;  
providing a second actuator comprising a drive gear  
positioning solenoid;

5 shifting said brake pedal actuator to a neutral gear position  
and deactivating said drive gear positioning solenoid when the  
brake is engaged; and  
activating said drive gear positioning solenoid and shifting  
said brake pedal actuator to a drive gear position when the  
10 brake is disengaged.

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